

Abstract Submitted
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Towards iron sulfide nanocrystal-based photovoltaic devices: progress in synthesis, optimization, and solar cell applications TYLER KINNER, BRAD MONAHAN, KHAGENDRA BHANDARI, TERRY BIGIONI, RANDY ELLINGSON, The University of Toledo — Iron sulfide (FeS_2 , pyrite), a naturally abundant and non-toxic semiconductor with a high absorption coefficient and functional band gap for potential use in photovoltaics (PV). Our research focuses on the synthesis and optimization of iron sulfide nanocrystals (NCs) for PV application. Considerable challenges exist for FeS_2 NCs, namely concerning crystallinity and phase purity. Here, we present synthetic and post-synthetic routes to overcome defect issues in an effort to fabricate functional FeS_2 NC based devices, as well as attempts at synthesis of $\text{Co}_x\text{Fe}_{1-x}\text{S}_2$ for use as an n-type heterojunction partner.

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